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## **Interesting lacewings (Neuroptera: Berothidae, Nemopteridae, Myrmeleontidae) from the United Arab Emirates**

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**ABSTRACT. Interesting lacewings (Neuroptera: Berothidae, Nemopteridae, Myrmeleontidae) from the United Arab Emirates.**

This paper presents the species of lacewings (Neuroptera: Berothidae, Chrysopidae, Myrmeleontidae, Nemopteridae) collected in two locations in Jebel Hafeet, a mountain located south to the city of Al Ain in the United Arab Emirates. New faunal data on 13 species of lacewings from the UAE are reported. 7 species are recorded for the first time in the UAE; one Berothidae, two Nemopteridae and four Myrmeleontidae.

**KEY WORDS:** Neuroptera, Berothidae, Chrysopidae, Myrmeleontidae, Nemopteridae, United Arab Emirates, new records, fauna.

### **INTRODUCTION**

Most data on the occurrence of Neuroptera in the United Arab Emirates (UAE) mainly come from the 21<sup>st</sup> century. At the end of the 20<sup>th</sup> century, a zoogeographical evaluation (HÖLZEL 1998) summarized the knowledge on the fauna of Neuroptera in the Arabian Peninsula, but there was no information on the UAE. In the last two decades, the insect biodiversity of the UAE has been intensively researched. An annotated checklist of the insects of the UAE, including the known neuropteran species, was published by van HARTEN (2005). Based on fieldwork lasting several years, a summary of the local ant-lion fauna of the Emirate of Abu Dhabi was published (SAJI & WHITTINGTON 2008). Some years later, the results of systematic studies on various families of the order Neuroptera: Coniopterygidae (SZIRÁKI 2010), Ascalaphidae, Nemopteridae (SZIRÁKI 2011a, 2011b) and Myrmeleontidae (ÁBRAHÁM & van HARTEN 2014) were published in a series of monographs. Besides these papers, further publications gave the results of occasional research expeditions, descriptions of museum collections, etc. (ÁBRAHÁM 2014, KRIVOKHATSKY 2013, WHITTINGTON 2002). Despite the considerable intensification of fieldwork, the knowledge of Neuroptera in the various regions of the UAE is incompletely known or not yet discovered and mapped.

The results of the study are intended to contribute to a body of knowledge about the fauna of Ain Al Waal, which in turn might support any future conservation-minded initiatives in the area and mitigate the habitat degradation that will be likely inflicted on a species-rich series of habitats and micro-habitats by a large housing development,

under construction near one of the collecting sites. They also contribute to the knowledge of Wadi Tarabat's neuropteran fauna, which will be added to a growing species list of another site that is threatened by development.

## MATERIAL AND METHODS

The insects were collected and photographed at two locations on Jebel Hafeet (Fig. 1), a mountain just south to the city of Al Ain, UAE. With a height of about 1.140 metres, the limestone anticline, which is 17 km long and 4 km wide, is isolated from the Hajar range of mountains, which is located 20 km to the east. It straddles UAE in the north and Oman in the south, and represents a stark contrast to the flat plain that surrounds the mountain on all sides.

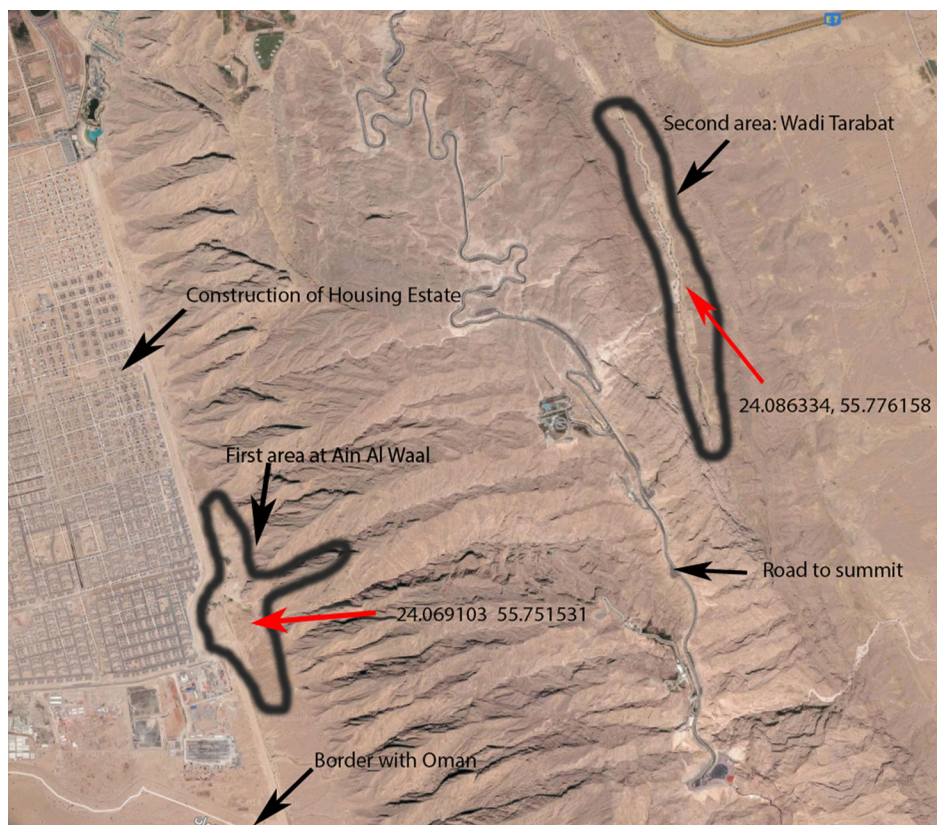


Fig. 1. Google view of both collecting sites. (<https://www.google.pl/maps/place/Wadi+Adventure-AI+Ain/@24.0572277,55.7684832,3769m/data=!3m1!1e3!4m5!3m4!1s0x3e8abbcd1d1e53dfd:0x730750710af5854b!8m2!3d24.093909!4d55.7388321>).

Ryc. 1. Widok Google dwóch stanowisk badawczych. (<https://www.google.pl/maps/place/Wadi+Adventure-AI+Ain/@24.0572277,55.7684832,3769m/data=!3m1!1e3!4m5!3m4!1s0x3e8abbcd1d1e53dfd:0x730750710af5854b!8m2!3d24.093909!4d55.7388321>).



The first collecting site was on the western flank of the mountain. The specimens were collected as part of a two-year biodiversity study at the site from January 2014 to December 2015. The length of the western side is known as Ain Al Waal, but the area of study spans for 1 km from north to south, and 750 metres up into a wadi to the east (Fig. 2). This area is between 1 and 2 kilometres from the Oman border, and centered at 24.069103; 55.751531 (WGS84). The collecting localities were at different spots no further than 200 metres from this site, at an elevation of 300 metres on a flat plain at the base of a wadi. At the time of collecting the specimens, the area had been free of human disturbance for many years, because of public access restrictions.



Fig. 2. The first location at Ain Al Waal (photo H. Roberts).

Ryc. 2. Pierwsze stanowisko w Ain Al Waal (fot. H. Roberts).

The second collecting site was Wadi Tarabat, which is in a different part of the mountain, and where a short survey was conducted in the spring of 2016 (Fig. 3). It is a wide, but high-sided wadi that stretches for over 3 km and cuts north to south into Jebel Hafeet. It is several kilometres from the Ain Al Waal study area. The coordinates for this second collecting location are 24.086334; 55.776158 (WGS84).

The Ain Al Waal antlions and other lacewings specimens were collected using two methods: by netting vegetation and light trapping. These were located in an area with a great variety of native flora including: *Prosopis cineraria*, *Vachellia tortilis*, *Ziziphus spina-crista*, *Calotropis procera*, *Ochradenus arabicus*, *Ochradenus aucherii*, *Tetraena qatarense* and *Aerva javanica*.



Fig. 3. The second location at Wadi Tarabat (photo H. Roberts).

Ryc. 3. Drugie stanowisko w Wadi Tarabat (fot. H. Roberts).

The antlions and other net-winged insects from Wadi Tarabat were collected by light trapping in an area that includes a rather varied assemblage of plants including: *Prosopis cineraria*, *Acacia tortilis*, *Acridocarpus orientalis*, *Capparis cartilaginea*, *Lycium shawi*, *Moringa peregrina*, and *Forsskaolea tenacissima*.

At first, all specimens from both locations were preserved in 70% isopropyl alcohol and later, the specimens were pinned and deposited in the entomological collection of the Upper Silesian Museum in Bytom.

## RESULTS AND DISCUSSION

On Jebel Hafeet, a mountain near the city of Al Ain in the United Arab Emirates, altogether 13 lacewing species were recorded. Although researchers have recently paid a great attention to the biodiversity of insect fauna, many areas are still unexplored. This paper is only a small contribution to mapping the neuropteran fauna in the mountainous area of the eastern part of the UAE.

The results of the study are also intended to contribute to a body of knowledge about the fauna of Jebel Hafeet, a species-rich mountain in Abu Dhabi, UAE. It is hoped that this note might support any future conservation-minded initiatives in an area that is experiencing a population influx and serious environmental challenges.

The nomenclature of Myrmeleontidae follows as in ÁBRAHÁM & VAN HARTEN (2014). Species new to the United Arab Emirates are asterisked (\*).

**Chrysopidae SCHNEIDER, 1851*****Chrysoperla* sp.**

2♀ – 09.05.2014, 02.03.2015, Ain Al Waal, Al Ain, 24.069103N, 55.751531E leg. Huw Roberts.

**Berothidae HANDLIRSCH, 1908****\**Nodalla (Nodalla) saharica* (ESBEN-PETERSEN, 1920)**

1♀ – 24.11.2014, Ain Al Waal, Al Ain, 24.069103N, 55.751531E leg. Huw Roberts; 1♀ – 02.05.2016, Wadi Tarabat, Al Ain, 24°5'13.12"N, 55°46'33.21"E, leg. Huw Roberts.  
General distribution: Africa: Algeria, Morocco, Egypt, Sudan, Senegal, Niger, Nigeria; Asia: Israel, Saudi Arabia, Yemen, Oman, Iraq, Iran, Afghanistan (ASPÖCK & ASPÖCK 1998).

**Nemopteridae BURMEISTER, 1839****\**Croce aristata* (KLUG, 1838)**

1♀ – 12.05.2016, Wadi Tarabat, Al Ain, 24°5'13.12"N, 55°46'33.21"E, leg. Huw Roberts.  
General distribution: Africa: Libya, Egypt; Asia: Israel, Saudi Arabia, Oman, Sinai (ASPÖCK *et al.* 2001).

***Dielocroce elegans* (ALEXANDROVA-MARTYNOVA, 1930)**

1♂, 2♀ – 17.04.2016, Al Dhaid / 25°17'N, 55°53'E/, leg. J. Buszko; 1♀ – 16.03.2015, Ain Al Waal, Al Ain, 24.069103N, 55.751531E leg. Huw Roberts.  
General distribution: Asia: Afghanistan, Pakistan, Iran, most of the countries in the Arabian Peninsula (Saudi Arabia, Oman, UAE, Yemen), Israel, Syria (ASPÖCK *et al.* 2001, SZIRÁKI 2011b).

**\**Dielocroce modesta* HÖLZEL, 1975**

1♀ – 15.05.2016, Wadi Tarabat, Al Ain, 24°5'13.12"N, 55°46'33.21"E, leg. Huw Roberts.  
General distribution: Asia: Iran, Oman (HÖLZEL 1999) and Turkey (DOBOSZ & ÁBRAHÁM 2009).

***Halter nutans* NAVÁS, 1910**

1♀ – 15.04.2014, Ain Al Waal, Al Ain, 24.069103N, 55.751531E leg. Huw Roberts.  
General distribution: Asia: Iraq, Oman, Afghanistan, Iran, Pakistan, United Arab Emirates (ÁBRAHÁM 2014, SZIRÁKI 2011b).

**Myrmeleontidae LATREILLE, 1802****\**Solter propheticus* HÖLZEL, 1981**

2♀ – 02.05.2016, Wadi Tarabat, Al Ain, 24.086334N, 55.776158E leg. Huw Roberts; 1♀ – 12.05.2016, Wadi Tarabat, Al Ain, 24.086334N 55.776158E N of Oman border, leg. Huw Roberts.  
General distribution: Africa: Egypt, Sudan; Asia: Israel, Saudi Arabia (OSWALD 2016).

**\**Cueta amseli* HÖLZEL, 1982**

1♀ – 05.10.2014, Ain Al Waal, Al Ain, 24.069103N, 55.751531E. leg. Huw Roberts.

General distribution: Species described and only known from Saudi Arabia and Oman (HÖLZEL 1982, 1998).

***Myrmeleon hyalinus* OLIVIER, 1811**

1♀ – 15.03.2015, Ain Al Waal, Al Ain, 24.069103N, 55.751531E leg. Huw Roberts.

This species was recorded from the UAE for the first time by ÁBRAHÁM & van HARTEN (2014).

General distribution: Atlantic Islands: Canaries (Fuerteventura, Lanzarote). Africa: Morocco, Algeria, Tunisia, Libya, Egypt, Senegal, Gambia, Sudan; Asia: Israel, Lebanon, Syria, Iraq, Iran, Saudi Arabia, Oman, Yemen, Sinai (ASPÖCK *et al.* 2001).

***Myrmeleon fasciatus* (NAVÁS, 1912)**

1♀ – 23.11.2014, Ain Al Waal, Al Ain, 24.069103N, 55.751531E leg. Huw Roberts; 3♀ – 27.11.2014, Ain Al Waal, Al Ain, 24.069103N, 55.751531E leg. Huw Roberts; 1♂, 1♀ – 10.12.2014, Ain Al Waal, Al Ain, 24.069103N, 55.751531E. leg. Huw Roberts; 1♀ – 15.05.2016, Wadi Tarabat, Al Ain, 24.086334N 55.776158E leg. Huw Roberts.

This species was recorded from the UAE for the first time by ÁBRAHÁM & van HARTEN (2014).

General distribution: Europe: Greece (Rhodes Isl.); Africa: Morocco, Algeria, Tunisia, Libya, Egypt; Asia: Israel, Saudi Arabia, Sinai, Yemen and Oman (ÁBRAHÁM & van HARTEN 2014, ASPÖCK *et al.* 2001, HÖLZEL 2002).

**\**Neuroleon amseli* HÖLZEL, 1983**

1♀ – 27.11.2014, Ain Al Waal, Al Ain, 24.069103N, 55.751531E leg. Huw Roberts; 1♀ – 23.11.2014, Ain Al Waal, Al Ain, 24.069103N, 55.751531E leg. Huw Roberts.

General distribution: Species described and only known from Saudi Arabia (HÖLZEL 1983, ASPÖCK *et al.* 2001).

***Creoleon antennatus* (NAVÁS, 1914)**

1♀ – 27.11.2014, Ain Al Waal, Al Ain, 24.069103N, 55.751531E. leg. Huw Roberts; 1♀ – 10.11.2015, Ain Al Waal, Al Ain, 24.069103N, 55.751531E leg. Huw Roberts; 1♀ – 18.02.2015, Ain Al Waal, Al Ain, 24.069103N, 55.751531E leg. Huw Roberts.

General distribution: Asia: Israel, Saudi Arabia, Oman, Iran and the UAE; Africa: Morocco, Algeria, Egypt, Sudan (ÁBRAHÁM & van HARTEN 2014).

***Creoleon surcoufi* (NAVÁS, 1912)**

1♀ – 24.11.2014, Ain Al Waal, Al Ain, 24.069103N 55.751531E leg. Huw Roberts.

General distribution: Africa: Tunisia (GÜSTEN 2003) and the UAE (ÁBRAHÁM & van HARTEN 2014), but a revision of its taxonomical status and distribution is needed in the future.

**\**Creoleon parvulus* (HÖLZEL, 1983)**

1♀ – 05.05.2015, garden, Al Muwaiji area, Al Ain, leg. Huw Roberts.

General distribution: Species described and only known from Saudi Arabia (HÖLZEL 1983, ASPÖCK *et al.* 2001).



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## STRESZCZENIE

### **Interesujące gatunki sieciarek (Neuroptera: Berothidae, Nemopteridae, Myrmeleontidae) ze Zjednoczonych Emiratów Arabskich**

W publikacji prezentowane są wyniki badań prowadzonych w górach Jebel Hafeet, w okolicach miasta Al Ain. Podczas odłowów na dwóch stanowiskach w latach 2014-2016, zebranych zostało 13 gatunków sieciarek, w tym siedem nowych dla Zjednoczonych Emiratów Arabskich: *Nodalla (Nodalla) saharica* (Berothidae), *Croce aristata* i *Dielocroce modesta* (Nemopteridae) oraz *Solter propheticus*, *Cueta amseli*, *Neuroleon amseli* i *Creoleon parvulus* (Myrmeleontidae).

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